Mastery Learning in Intestinal Ultrasound Training: A Meaningful Step Forward, With Miles Still to Go

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The expanding role of intestinal ultrasound (IUS) in the management of inflammatory bowel disease (IBD) reflects a broader shift toward non-invasive, point-of-care assessment strategies. Compared with conventional endoscopy, IUS offers advantages in patient comfort, repeatability, non-ionizing radiation, and real-time evaluation of disease activity. Most of the large bowel and major parts of the small bowel can be visualized by IUS. The role of IUS as a non-invasive, inexpensive imaging modality for assessing treatment response in transmural inflammation in CD has been evaluated in many studies, which have compared it with colonoscopy.[1-3] IUS has shown diagnostic accuracy comparable to that of Magnetic Resonance Enterography (MRE) in detecting transmural inflammation, strictures, or abscesses, which are common in CD. However, the widespread adoption of IUS remains constrained by a critical barrier: the lack of structured, standardized training pathways, particularly in low–and middle–income settings.

In this issue, Pribadi et al.[4] present an important contribution by evaluating a mastery-learning–based workshop designed to enhance IUS skills among physicians in Indonesia. Their study demonstrates that a short, intensive educational intervention incorporating flipped learning, hands-on practice, and real-time feedback can yield significant improvements in technical performance. These findings underscore the potential of mastery learning as a pedagogical framework for procedural training in gastroenterology. They evaluate a mastery-learning–based educational intervention to improve physicians' intestinal ultrasound (IUS) skills. The topic is timely and clinically relevant, particularly given the growing role of IUS in the management of inflammatory bowel disease (IBD) and the need for structured training programs in low–and middle-income countries. The study demonstrates significant improvements in skill acquisition with large effect sizes. However, several methodological limitations particularly the absence of a control group, small sample size, and limited detail regarding assessment validity—restrict the strength of the conclusions. Further clarification and refinement are needed.

Mastery learning, characterized by clearly defined competency standards and deliberate practice until those standards are achieved, has gained increasing recognition in medical education.[5,6] Its application to IUS training is particularly appealing, given the operator-dependent nature of ultrasound and the need for reproducible skill acquisition. Previous studies in procedural disciplines have demonstrated that mastery learning can improve both learner performance and patient-related outcomes.[6]

Nevertheless, the findings also reveal important challenges. Despite significant improvement, only approximately two-thirds of participants achieved competency in sigmoid

colon scanning, and half met the standard for terminal ileum assessment.[4] This gap between improvement and competency attainment suggests that short-term workshops alone may be insufficient to ensure consistent proficiency particularly for technically demanding targets such as the terminal ileum.

These observations raise critical questions regarding the optimal structure of IUS training programs. Should mastery learning be delivered as a single intensive workshop, or as a longitudinal curriculum with repeated practice and assessment? Current international recommendations emphasize the importance of structured training pathways and competency-based assessment in gastrointestinal ultrasound.[7]

From a methodological perspective, the study provides valuable preliminary data but also highlights areas for future refinement. The absence of a control group limits causal inference, and the reliance on immediate post-training outcomes precludes assessment of skill retention. Furthermore, additional transparency regarding the validation of assessment tools and standard-setting procedures would strengthen confidence in the reported competency thresholds. Future research should aim to incorporate prospective designs, longitudinal follow-up, and evaluation of clinical impact.

Importantly, this study contributes to a growing body of evidence supporting the integration of educational science into procedural training in gastroenterology. As the field moves toward competency-based education, mastery learning offers a structured, reproducible approach to skill development. However, achieving true mastery requires not only initial training but also sustained practice, mentorship, and ongoing assessment. IUS is a diagnostic method that requires adherence to numerous standards and specialized training.[8]

The workshop followed mastery learning principles, including deliberate practice, timely feedback, and the expert performance approach (EPA), which have proven effective in gastrointestinal endoscopy training.[9,10]

In conclusion, the study by Pribadi et al.[4] represents a significant step forward in advancing IUS education in Indonesia and similar settings. It demonstrates that mastery learning–based interventions can effectively enhance early skill acquisition, while also highlighting the need for continued training to achieve and maintain competency. The challenge moving forward will be to translate these educational gains into durable clinical expertise and improved patient outcomes.

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